Translation of Amendment under PCT, Article 34

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[0007] However, it is very difficult to divide an electron beam into two portions. Accordingly, when a recording track and a prebit and a recording track are recorded, it is necessary to frequently move any one or both of an optical recording medium and the electron beam.

[0008] The present invention is provided in consideration of the above problem, an example of the object is to newly provide an information recording method for recording onto an original disc and an information recording apparatus, which can deal with high density of an optical recording medium in recent years.

Means for Solving the Problem

[0009] According to Claim 1, in order to solve the problem, there is provided an information recording method which records a recording track and a prepit positioned between the recording tracks into an original disc, wherein the recording track and the prepit are recorded by appropriately deflecting a single beam **in a radius direction of the original disc and a tangential direction of the original disc while the original disc goes into a 360-degree roll.**

[0010] According to Claim 2, in order to solve the problem, there is provided an information recording method which records a recording track and a prepit positioned between the recording tracks into an original disc, wherein Steps 1-4 are sequentially repeated. (Step 1) The recording track is recorded by

irradiating a beam onto the original disc **while the original disc goes into a 360-degree roll.**. (Step 2) When a predetermined position on the original disc comes, the beam used to record the recording track is deflected to where the prepit is to be formed on the original disc. (Step 3) Recording the prepit by irradiating the beam onto the original disc. (Step 4) When a predetermined position on the original disc comes, the beam is again deflected to the position where the beam has been previously deflected from recording of the recording track to recording of the prepit.

[0011] According to Claim 4, in order to solve the problem, there is provided the information recording apparatus including a rotation driving unit for supporting and rotating the original disc, a movement driving unit for moving the rotation driving unit in a direction of radius of the original disc, and a beam irradiating means for irradiating a single beam onto the original disc so as to be freely deflectable, further including

a deflection signal generating means for generating a radius direction deflection signal for deflecting the single beam in a radius direction of the original disc and a tangential direction deflection signal for deflecting to a tangential direction of the original disc, and a beam deflecting unit for deflecting the single beam on the basis of the radius direction deflection signal and the tangential direction deflection signal, wherein

a track and a prepit are recorded on the original disc using the single beam which is deflected in the radius and

tangential directions **while the original disc goes into a 360-degree roll.**.

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Brief Explanation of Drawings

[0012]

[Figure 1] An explanatory view for explaining an information recording method for recording a recording track and a prepit onto an original disc.

[Figure 2] A schematic block diagram of an electron beam recorder 10 as being an information recording apparatus according to the present application.

[Figure 3] A view for showing a deflection signal used in the information recording apparatus shown in Figure 2.

Explanation of Numerical References

[0013]

T1, T2…Recording track

P1…Prepit

10…Electron Beam Recorder

15…Original Disc

16…Turn Table

25…Controller

30…Transfer and rotation control unit

40…Electron Beam Column Unit

45…Beam Deflection Electrode

55…Beam Deflecting Unit

Best Mode for Carrying out the Invention

[0014] Hereinafter, an information recording method and an information recording apparatus with respect to an optical recording medium according to the present invention will be more concretely described in reference of figures.

[0015] The method of the present application is an information recording method of recording a recording track and a prepit positioned between the tracks onto an original disc, wherein it is characterized that a single beam is appropriately deflected in recording the prepit.

[0016] According to the present application, when both of a recording track and a prepit are recorded, it is possible to use only a single beam without using a plurality of beams or dividing a beam into two portions. Further, since it is unnecessary to divide the beam, an electron beam can be used. As a result, it is possible to deal with high density of an optical recording medium.

CLAIMS:

[1] An information recording method of recording a recording track and a prepit positioned between the tracks characterized by comprising steps of:

recording the recording track and the prepit by

sequentially deflecting a single beam **in a radius direction of the original disc and a tangential direction of the original disc while the original disc goes into a 360-degree roll.**

[2] An information recording method of recording a recording track and a prepit positioned between the recording tracks characterized by comprising Steps 1 to 4, which are sequentially repeated **while the original disc goes into a 360-degree roll**, of:

(Step 1) recording the recording track by irradiating a beam onto an original disc;

(Step 2) deflecting the beam used for recording the recording track to a position where a prepit is to be formed when the beam reaches a predetermined position on the original disc;

(Step 3) recording the prepit by irradiating the beam onto the original disc; and

(Step 4) deflecting the beam again to the position of the original disc where the deflection from the recording of the recording track to the recording of the prepit takes place when the beam reaches a predetermined position of the original disc.

[4] An information recording apparatus including a rotation driving unit for supporting and rotating an original disc, a movement driving unit for moving the rotation driving unit in

a radius direction of an original disc, and a beam irradiating means for irradiating a single beam onto the original disc so as to be freely deflectable, the information recording apparatus comprising:

a deflection signal generating means for generating a radius direction deflection signal for deflecting the single beam to the radius direction of the original disc and a tangential direction deflection signal for deflecting the single beam to a tangential direction of the original disc; and

a beam deflecting unit for deflecting the single beam on the basis of the radius direction deflection signal and the tangential direction deflection signal to record the track and the prepit on the original disc using the single beam deflected in the radius and tangential directions **while the original disc goes into a 360-degree roll**.

[5] The information recording apparatus according to Claim 4, wherein

the beam is an electron beam.